County pregnancy rates and school districts' family life education requirements

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Tennessee Code Annotated 49-6-1302 requires all school districts in counties with a pregnancy rate exceeding 19.5 per 1,000 females, ages 15–17, to create and implement a family life education program.[1] Family life education programs are to be locally developed or districts may adopt the curriculum approved by the State Board of Education. Previous versions of the law required school districts to provide family life education for four years after exceeding the 19.5 rate; changes made to the law in 2012 (Public Chapter 973) deleted this requirement. Under current law, districts must provide the instruction when they exceed the 19.5 rate, based on data maintained by the Department of Health, State Center for Health Statistics, and must make staffing decisions about the teaching of family life education year-to-year.

In the table beginning on page 4, counties with rates highlighted are those whose school districts must implement a family life education program, based on 2015 rates (the most current to date) provided by the Tennessee Department of Health. **Click on the map** to see information for all school districts in the state, including rates for previous years. See Appendix A for a list that compares annual rates by county for 2010 through 2015. See *Tennessee Code Annotated* 49-6-1301, et seq., for statutory requirements concerning family life programs in Tennessee schools. See county pregnancy rate statistics maintained by the Tennessee Department of Health at http://tn.gov/health/article/statistics-pregnancy.

The statewide pregnancy rate per 1,000 females, ages 15-17, has decreased from a 2010 rate of 24.8 to a rate of 15.2 in 2015. The total number of pregnancies for that population was 1,854 in 2015, down from 3,104 in 2010. **In reviewing the data, it is important to note that counties that have high rates but also have a small population of females age 15-17 may have low corresponding numbers of pregnancies; these rates are considered statistically unstable and should be used with caution.** See a policy consideration discussion about this issue below.

Policy Consideration: Calculating pregnancy rates using small numbers results in unstable rates

Many Tennessee counties have small numbers of adolescent pregnancies, as well as small populations of adolescent females in the 15-17 age range. Calculating pregnancy rates using such small numbers can result in rates that vary widely from one year to the next. There are approximately 121,626 total 15-17 year old females in the state. There are only two counties with populations over 10,000 (Davidson and Shelby counties); 24 counties have populations with 15-17 year old females over 1,000; 41 with less than 500; and four counties with less than 100.

Pregnancy rates are typically calculated as a rate per 1,000 females of a given age range within a specific geographic area. For the purposes of determining which districts should teach a family life curriculum, *TCA* 49-6-1302 requires using pregnancy rates based on populations of females aged 15-17 as calculated by the Tennessee Department of Health. These calculations are made by county; resulting rates apply to all school districts within a particular county. The calculation used is:

> Adolescent pregnancy rate = (Number of pregnancies of females aged 15-17 in a county / Number of females aged 15-17 in a county) * 1,000

When the number of pregnancies in the calculation is very small and the total population of the age range being used is also relatively small – both of which occur often in several Tennessee counties – the resulting rate can vary widely from one year to the next.

The following table shows actual numbers and rates of pregnancies in past years in four Tennessee counties – the county names are not shown to protect the privacy of the populations for which the rates were calculated:

Exhibit 1: Comparisons of adolescent pregnancy rates in four unnamed Tennessee counties in various years

	Year 1				Year 2			
	# of pregnant females age 15-17	total population of females age 15-17	pregnancy rate	pregnancy rate per 1,000 females age 15-17	# of pregnant females age 15-17	total population of females age 15-17	pregnancy rate	pregnancy rate per 1,000 females age 15-17
County A	9	250	.036	36.0	1	212	.0047	4.7
County B	12	502	.0239	23.9	6	576	.0104	10.4
County C	5	221	.0226	22.6	2	253	.0079	7.9
County D	5	145	.0345	34.5	2	147	.0136	13.6

Exhibit 1 illustrates that a county can have a small number of adolescent pregnancies, which can result in either a large or small pregnancy rate, triggering the requirement under state law to teach a family life course in one year and not in another.

According to the Centers for Disease Control and Prevention:

> In general, rates . . . are more variable in smaller populations. This is because the numerator . . . varies more — or varies by a greater proportion — from one year to the next in a small population than it does in a large population.
>
> Variability affects how we interpret changes in rates over time. It also influences our ability to compare rates from different geographic areas, sexes, age groups, etc. A rate that varies greatly from year to year complicates our ability to predict what that rate might be in the coming year. It also makes it difficult to determine whether a change in the rate represents a "true" (and thus, important) difference — or whether it is just an unusually low or high point or a one-time "fluke."[2]

Some other states' Departments of Health handle the calculation and reporting of adolescent pregnancy rates differently. For example:

- The Washington State Department of Health does not publish either the number or rate for a county with fewer than five adolescent pregnancies – partly because the resulting rate is not stable and partly to protect those adolescents' privacy.[3]
- The Indiana Department of Health follows the "Rule of Twenty" when calculating rates for certain purposes, requiring at least 20 events in the numerator (the number of pregnancies) to produce a stable rate. The agency recommends combining data from three years to produce a rate when numbers are small.[4]

Policy Consideration

The Tennessee Department of Education and Tennessee Department of Health may wish to review and identify potential changes to the state's current policy in this area. Items for consideration by the departments include:

1. the stability of the adolescent pregnancy rate.
2. whether to calculate and/or publish the number of adolescent pregnancies and the adolescent pregnancy rate for counties with statistics that fall below a certain threshold.
3. establishing a trend analysis or an established threshold for each county based on the population under consideration (15-17 year old girls) to ensure proper interpretation of rates and numbers used to base program guidance and decision-making.

4. potential privacy issues related to the publishing of the number of adolescent pregnancies and the adolescent pregnancy rate. (Note that for small counties, the development of a trend analysis or established threshold in item 3 above may require many years for aggregation levels to reach thresholds necessary to protect identities and make a statement representative of the sub-population.)
5. family life education requirements in state law.
6. other issues as identified.

Exhibit 2: 2015 Pregnancy Rates in Tennessee Counties, per 1,000 females, ages 15-17

Counties / *School Districts*	2015 pregnancy rate per 1,000 females, ages 15-17
Anderson	20.9
Anderson County	
Clinton	
Oak Ridge	
Bedford	12.7
Bedford County	
Benton	18.9
Benton County	
Bledsoe	14.5
Bledsoe County	
Blount	11.7
Blount County	
Alcoa	
Maryville	
Bradley	15.3
Bradley County	
Cleveland	
Campbell	25.8
Campbell County	
Cannon	8.9
Cannon County	
Carroll	11.4
Carroll County	
Hollow Rock-Bruceton	
Huntingdon	
McKenzie	
South Carroll	
West Carroll Sp. District	

Counties / *School Districts*	2015 pregnancy rate per 1,000 females, ages 15-17
Carter	9.1
Carter County	
Elizabethton	
Cheatham	21.5
Cheatham County	
Chester	12.7
Chester County	
Claiborne	14.4
Claiborne County	
Clay	26.5
Clay County	
Cocke	20.2
Cocke County	
Newport	
Coffee	19.6
Manchester	
Tullahoma	
Crockett	6.5
Crockett County	
Alamo	
Bells	
Cumberland	27.9
Cumberland County	
Davidson	16.7
Davidson County	
Decatur	-
Decatur County	
Dekalb	24.1
Dekalb County	
Dickson	12.2
Dickson County	
Dyer	13.9
Dyer County	
Dyersburg	

Counties / *School Districts*	2015 pregnancy rate per 1,000 females, ages 15-17
Fayette	9.7
Fayette County	
Fentress	9.1
Fentress County	
Franklin	5.6
Franklin County	
Gibson	10.7
Gibson Co. Sp. District	
Humboldt	
Milan	
Trenton	
Bradford	
Giles	23.0
Giles County	
Grainger	13.4
Grainger County	
Greene	14.7
Greene County	
Greeneville	
Grundy	8.6
Grundy County	
Hamblen	19.0
Hamblen County	
Hamilton	12.0
Hamilton County	
Hancock	*
Hancock County	
Hardeman	16.0
Hardeman County	
Hardin	9.1
Hardin County	
Hawkins	14.3
Hawkins County	
Rogersville	
Haywood	14.5
Haywood County	

Counties / *School Districts*	2015 pregnancy rate per 1,000 females, ages 15-17
Henderson	11.9
Henderson County	
Lexington	
Henry	7.9
Henry County	
Paris	
Hickman	15.6
Hickman County	
Houston	26.8
Houston County	
Humphreys	20.5
Humphreys County	
Jackson	-
Jackson County	
Jefferson	11.6
Jefferson County	
Johnson	4.1
Johnson County	
Knox	13.0
Knox County	
Lake	-
Lake County	
Lauderdale	21.7
Lauderdale County	
Lawrence	14.6
Lawrence County	
Lewis	9.7
Lewis County	
Lincoln	13.5
Lincoln County	
Fayetteville	
Loudon	11.3
Loudon County	
Lenoir City	
Macon	31.2
Macon County	

Counties / *School Districts*	2015 pregnancy rate per 1,000 females, ages 15-17
Madison	17.6
Madison County	
Marion	17.8
Marion County	
Richard City	
Marshall	19.5
Marshall County	
Maury	14.2
Maury County	
McMinn	21.9
McMinn County	
Athens	
Etowah	
McNairy	20.3
McNairy County	
Meigs	31.7
Meigs County	
Monroe	20.0
Monroe County	
Sweetwater	
Montgomery	11.0
Montgomery County	
Moore	-
Moore County	
Morgan	23.6
Morgan County	
Obion	20.7
Obion County	
Union City	
Overton	12.3
Overton County	
Perry	8.0
Perry County	
Pickett	*
Pickett County	
Polk	12.9
Polk County	

Counties / *School Districts*	2015 pregnancy rate per 1,000 females, ages 15-17
Putnam	10.0
Putnam County	
Rhea	23.0
Rhea County	
Dayton	
Roane	14.5
Roane County	
Robertson	20.1
Robertson County	
Rutherford	9.1
Rutherford County	
Murfreesboro	
Scott	21.6
Scott County	
Oneida	
Sequatchie	20.3
Sequatchie County	
Sevier	14.8
Sevier County	
Shelby	24.4
Arlington City	
Bartlett City	
Collierville City	
Germantown City	
Lakeland City	
Millington City	
Shelby County	
Smith	13.7
Smith County	
Stewart	8.5
Stewart County	
Sullivan	9.1
Sullivan County	
Bristol	
Kingsport	
Sumner	13.1
Sumner County	

Counties / *School Districts*	2015 pregnancy rate per 1,000 females, ages 15-17
Tipton	17.3
Tipton County	
Trousdale	31.3
Trousdale County	
Unicoi	9.8
Unicoi County	
Union	29.1
Union County	
Van Buren	*
Van Buren County	
Warren	22.2
Warren County	
Washington	8.5
Washington County	
Johnson City	
Wayne	19.3
Wayne County	
Weakley	5.2
Weakley County	
White	13.1
White County	
Williamson	3.4
Williamson County	
Franklin Sp. School District	
Wilson	7.9
Wilson County	
Lebanon	
State Average	**15.2**

Note: * means rate not calculated when population is less than 100. – means the rate has been suppressed by race when white or black population is less than 50. (Though not shown here, the Tennessee Department of Health also supplies this data by race.)

Source: Number of pregnancies per 1,000 females aged 15-17, for counties of Tennessee, resident data, 2015, Office of Health Statistics, Division of Policy, Planning, and Assessment, Tennessee Department of Health.

Endnotes

[1] Tennessee law defines family life education as an abstinence-centered sex education program that builds a foundation of knowledge and skills relating to character development, human development, decision-making, abstinence, contraception, and disease prevention. The curriculum must be abstinence-based, provide factually and medically accurate information, and educate students on topics such as the age of consent, puberty, pregnancy, childbirth, sexually transmitted diseases such as HIV/AIDS, and healthy relationships. See T.C.A. 49-6-1302.

[2] Centers for Disease Control and Prevention, National Center for Health Statistics, 1999, p. 21 https://www.cdc.gov/ (accessed Jan. 30, 2017).

[3] Washington State Department of Health, Teen Pregnancy and Childbearing, April 2013, http://www.doh.wa.gov/ (accessed Feb. 17, 2017).

[4] Indiana State Department of Health, Rates, Small Numbers, Percents, etc., not dated, p. 3, http://www.in.gov/ (accessed Feb. 15, 2017).

Appendix A: 2010, 2011, 2012, 2013, 2014, and 2015 pregnancy rates in Tennessee counties, per 1,000 females, ages 15-17 (Note: orange highlight denotes a rate requiring school districts within counties to teach family life instruction)

Counties	Pregnancy rate, per 1,000 females, ages 15-17					
	2015	2014	2013	2012	2011	2010
Anderson	20.9	19.9	14.8	18.3	24.4	25.2
Bedford	12.7	18.1	22.6	25.3	25.2	20.5
Benton	18.9	29.7	28.8	25.5	38.7	23.3
Bledsoe	14.5	9.9	5.0	13.8	22.6	7.9
Blount	11.7	15.1	15.2	17.7	16.4	18.4
Bradley	15.3	14.2	12.3	18.2	14.5	23.0
Campbell	25.8	14.0	28.5	30.1	22.9	25.9
Cannon	8.9	13.6	8.8	24.4	4.0	13.7
Carroll	11.4	26.6	8.5	29.4	20.1	25.2
Carter	9.1	18.1	16.9	15.7	20.8	24.3
Cheatham	21.5	13.3	12.9	20.2	7.5	19.1
Chester	12.7	12.7	12.9	10.9	8.7	11.6
Claiborne	14.4	11.5	21.7	12.9	28.2	19.3
Clay	26.5	17.5	24.8	36.2	21.1	20.3
Cocke	20.2	25.0	33.6	33.7	44.9	29.8
Coffee	19.6	24.3	15.5	26.1	23.7	34.0
Crockett	6.5	13.8	10.8	28.1	27.5	39.9
Cumberland	27.9	15.4	25.6	27.5	19.9	45.6
Davidson	16.7	16.0	20.9	21.6	23.3	29.3
Decatur	-	15.8	20.5	29.6	14.1	13.2
Dekalb	24.1	11.9	24.3	35.3	42.1	20.8
Dickson	12.2	13.1	9.7	20.1	19.0	17.2
Dyer	13.9	15.6	29.7	41.6	34.4	26.6
Fayette	9.7	8.2	17.0	13.2	23.2	23.2
Fentress	9.1	21.1	9.1	28.4	14.3	22.5
Franklin	5.6	8.2	15.3	21.0	18.6	16.3
Gibson	10.7	15.2	28.3	24.0	28.5	14.7
Giles	23.0	9.7	4.0	13.5	14.2	24.8
Grainger	13.4	20.8	29.8	25.4	28.7	22.6
Greene	14.7	12.9	13.8	19.4	18.1	19.6
Grundy	8.6	17.5	26.0	12.3	20.1	18.5
Hamblen	19.0	24.8	24.5	24.0	22.1	33.1
Hamilton	12.0	11.8	14.4	19.0	16.8	17.8
Hancock	*	19.0	27.8	24.2	23.6	-
Hardeman	16.0	27.5	15.9	26.1	27.9	32.6
Hardin	9.1	13.3	11.1	28.8	22.9	21.5

Counties	Pregnancy rate, per 1,000 females, ages 15-17					
	2015	2014	2013	2012	2011	2010
Hawkins	14.3	21.6	13.3	19.0	30.0	18.8
Haywood	14.5	34.6	41.6	26.2	34.5	41.7
Henderson	11.9	11.7	19.2	17.2	20.8	25.0
Henry	7.9	18.4	35.9	32.0	25.9	14.6
Hickman	15.6	27.3	28.9	21.6	30.8	20.7
Houston	26.8	19.6	19.7	36.8	6.2	6.0
Humphreys	20.5	22.7	15.6	20.7	10.8	23.3
Jackson	-	14.9	20.0	44.1	14.5	9.1
Jefferson	11.6	17.6	12.6	20.1	18.7	22.7
Johnson	4.1	30.1	27.3	26.4	15.2	30.2
Knox	13.0	13.3	13.7	16.0	16.2	21.4
Lake	-	59.7	40.0	24.4	34.9	10.2
Lauderdale	21.7	14.0	25.6	24.9	22.4	37.0
Lawrence	14.6	18.6	9.3	24.9	25.9	24.1
Lewis	9.7	46.5	4.7	26.8	25.6	36.0
Lincoln	13.5	16.6	18.5	28.1	20.5	25.2
Loudon	11.3	18.4	19.5	31.6	13.6	17.6
Macon	31.2	26.5	28.8	49.8	25.3	32.3
Madison	17.6	13.3	20.8	19.0	22.3	24.5
Marion	17.8	23.9	16.6	30.3	34.6	27.6
Marshall	19.5	13.7	17.5	21.0	31.8	23.3
Maury	14.2	16.3	16.9	21.1	31.2	32.0
McMinn	21.9	16.8	13.4	17.2	17.9	21.7
McNairy	20.3	20.5	10.9	16.5	23.9	10.4
Meigs	31.7	4.8	29.4	5.1	20.1	20.2
Monroe	20.0	22.0	14.2	25.4	21.3	33.8
Montgomery	11.0	10.6	17.5	17.9	21.2	21.4
Moore	-	-	8.8	7.9	16.3	20.0
Morgan	23.6	8.2	7.9	13.2	10.7	21.3
Obion	20.7	13.7	19.1	20.0	28.8	27.1
Overton	12.3	5.0	9.9	15.2	18.0	17.7
Perry	8.0	30.3	7.3	21.1	21.9	13.1
Pickett	*	-	12.5	-	-	16.9
Polk	12.9	23.7	21.3	24.8	13.1	17.7
Putnam	10.0	10.6	15.6	10.1	13.1	22.0
Rhea	23.0	18.3	22.5	16.4	32.9	25.6
Roane	14.5	14.9	12.8	29.2	19.6	16.2
Robertson	20.1	10.5	15.3	20.5	20.9	23.7
Rutherford	9.1	10.7	12.8	14.2	16.8	19.9

Counties	Pregnancy rate, per 1,000 females, ages 15-17					
	2015	2014	2013	2012	2011	2010
Scott	21.6	24.5	36.1	32.6	27.0	14.0
Sequatchie	20.3	12.7	32.5	15.4	18.7	30.7
Sevier	14.8	22.6	15.7	28.0	24.1	31.5
Shelby	24.4	25.3	27.2	30.2	35.2	38.5
Smith	13.7	22.1	11.1	20.1	22.2	20.5
Stewart	8.5	7.9	4.0	22.3	22.6	3.4
Sullivan	9.1	13.3	18.2	18.4	20.0	24.1
Sumner	13.1	14.0	16.5	16.6	20.7	17.6
Tipton	17.3	12.4	15.6	14.7	17.8	16.1
Trousdale	31.3	6.3	19.6	31.7	34.5	13.6
Unicoi	9.8	9.6	10.3	34.2	27.3	22.4
Union	29.1	12.4	15.4	24.4	26.7	37.7
Van Buren	*	21.5	54.3	-	-	58.8
Warren	22.2	20.1	32.4	26.5	24.5	24.5
Washington	8.5	10.6	10.9	12.8	14.0	12.2
Wayne	19.3	16.2	37.7	20.3	15.2	10.2
Weakley	5.2	12.4	16.3	12.3	7.8	19.9
White	13.1	22.5	24.2	12.9	30.3	23.6
Williamson	3.4	2.3	5.7	6.0	6.4	7.8
Wilson	7.9	13.5	12.2	14.6	14.4	14.8
State Average	15.2	16.1	18.2	21.2	22.4	24.8

Notes: (1) Pregnancies include reported fetal deaths, abortions, and live births. (2) * means rate not calculated when population is less than zero. (3) – means no pregnancies age 15-17 to report. (4) Rates highlighted in orange denote counties with a pregnancy rate above 19.5 per 1,000 age 15-17 females.

Sources: Tennessee Department of Health, Office of Healthcare Statistics, Division of Policy, Planning, and Assessment.

- Birth Statistical System, Fetal Deaths Statistical System and Induced Termination of Pregnancy data system, 2014 and 2015.
- *Tennessee Adolescent Pregnancy Summary Data, 2013*, Feb. 2015, p. 3, http://tn.gov/
- *Tennessee Adolescent Pregnancy Summary Data, 2012*, April 2014, p. 3, http://tn.gov/
- *Tennessee Adolescent Pregnancy Summary Data, 2011*, April 2013, p. 3, http://tn.gov/
- *Tennessee Adolescent Pregnancy Summary Data, 2011*, Feb. 2012, p. 3, http://tn.gov/